Exploring space time anomalies: A comparative analysis Of black holes and the Bermuda triangle

Authors: Mr. Debraj Pratihar , Dept. of Computer Science and Engineering , Kazi Nazrul University
Contact: +91 80161 13479 | Email: debrajpratihar7@gmail.com

Mr. Sukriti Sahoo , Dept. of metallurgy , Kazi Nazrul University
Contact: +91 81452 31704 | Email: panditsukriti75@gmail.com
Mr. Paritosh Kumar Mishra , Dept. of Computer Science and Engineering , Kazi Nazrul University
Contact: +91 62876 53922 | Email: paritosh3210pranjal@gmail.com

Abstract: This paper investigates conceptual and speculative similarities between black holes—well-defined astrophysical objects governed by general relativity—and the Bermuda Triangle, a region associated with unexplained disappearances. While black holes are characterized by extreme gravitational effects and quantum phenomena, the Bermuda Triangle's mysteries are likely due to natural causes such as magnetic anomalies or methane hydrates. We propose a speculative spacetime model for the Bermuda Triangle, inspired by black hole metrics, and derive a hypothetical metric to describe potential gravitational or quantum anomalies.

1. **Introduction:** Black holes, predicted by Einstein's general relativity, are regions of spacetime where gravity is so intense that nothing—not even light—can escape beyond the event horizon. The Bermuda Triangle, bounded by Miami, Bermuda, and San Juan, is infamous for disappearances attributed to natural or speculative spacetime distortions. This paper explores conceptual parallels between these two domains—astrophysical and terrestrial—focusing on their mysterious nature, gravitational analogies, and speculative quantum correlations.

2. Theoretical Background

2.1 Black Holes

Black holes are described by Einstein's field equations:

$$R_{\mu\nu} - \tfrac{1}{2}Rg_{\mu\nu} = (8\pi G/c^4)T_{\mu\nu}.$$

The Schwarzschild metric defines a static black hole as

$$ds^2 = -(1 - 2GM/c^2r)c^2dt^2 + (1 - 2GM/c^2r)^{-1}dr^2 + r^2(d\theta^2 + \sin^2\theta\, d\varphi^2).$$

Quantum effects yield Hawking radiation with power

$$P \approx hc^6/(15360\pi G^2M^2).$$

Rotating(Kerr) black holes further permit closed timelike curves (CTCs) , theoratically allowing time-like loops .

2.2 The Bermuda Triangle

While the Bermuda Triangle lacks proven physical anomalies, speculative ideas such as micro-wormholes or local spacetime distortions persist. Natural causes such as storms, rogue waves, or navigation errors remain the dominant explanations.

3. Speculative Model

We propose a weak-field Schwarzschild-inspired spacetime model for the Bermuda Triangle:

$$ds^2 = -(1 - \Phi/c^2)c^2dt^2 + (1 - \Phi/c^2)^{-1}dr^2 + r^2(d\theta^2 + \sin^2\theta\, d\varphi^2)$$

where $\Phi(r) = GM_{eff}/r$ represents a hypothetical effective mass field describing transient gravitational or quantum effects. The small ratio Φ/c^2 ensures any effect remains observationally negligible. This approach mirrors black hole metrics but assumes $M_{eff} << M_{\oplus}$. Quantum fluctuations or vacuum energy differences may hypothetically produce transient curvature, conceptually linking microscopic quantum events to macroscopic phenomena. 4. Quantum Speculation Drawing from the Casimir effect, a vacuum fluctuation energy density

$$E_{fluct} \approx -hc\pi^2A/(720d^4)$$

could generate localized negative energy, potentially stabilizing micro-wormholes. While scaling this effect to macroscopic dimensions is implausible, it offers a mathematical analogy between quantum vacuum fields and claimed spacetime disturbances.

4. Discussion and Conclusion

Black holes are well-supported astrophysical entities governed by general relativity and quantum mechanics. The Bermuda Triangle, in contrast, remains an enigmatic region best explained by terrestrial physics. Nonetheless, using spacetime geometry to analogize such mysteries encourages interdisciplinary curiosity. The proposed metric demonstrates how relativistic methods can formalize even speculative Earth-bound phenomena.

References

1. Einstein, A. (1916). The Foundation of the General Theory of Relativity. 2. Hawking, S. W. (1974). Black Hole Explosions? Nature, 248, 30–31. 3. Morris, M. & Thorne, K. (1988). Wormholes in Spacetime and Their Use for Interstellar Travel. Am. J. Phys., 56, 395–412. 4. D. Pratihar & S. Sahoo (2025). Exploring Spacetime Anomalies: A Comparative Analysis of Black Holes and the Bermuda Triangle. Internal Draft, Kazi Nazrul University.